

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of

**FARBER et al.**

Appln. No. 09/612,598

Group Art Unit: 2152

Filed: July 7, 2000

Examiner: Almari ROMERO

**FOR: OPTIMIZED NETWORK RESOURCE LOCATION**

**DECLARATION OF ANDREW D. SWART  
UNDER 37 CFR § 1.131**

Hon. Commissioner for Patents  
Washington, D.C. 20231

Sir:

I, *Andrew D. Swart*, declare and state as follows:

- 1 I am a joint inventor with David A. Farber, Richard E. Greer and James A. Balter of the invention disclosed and claimed in subject Appln. No. 09/612,598.
- 2 Prior to August 1, 1997 we **completed the conception of the invention** in this country as shown by the following:
  - 2.1 Prior to August 1, 1997, we prepared invention disclosures for an invention (attached as Exhibit A).
  - 2.2 Described in the invention disclosure (Exh. A) is a distributed hosting framework operative in a computer network in which users of client machines connect to a first server (denoted "origin server" in the invention disclosure). See, e.g., Exh. A, Figure 2, Client C and Origin Server S ("a server at which resources originate", Exh. A, Pg. 9). The framework includes a set of repeater servers (e.g., Exh. A, Repeater Servers A and B in Figure 2), distinct from the first server, for hosting at least some of the embedded objects of web pages that are normally hosted by the first server.

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2.3 Our invention disclosure (Exh. A) further discloses modifying at least one embedded object URL of a web page (See, e.g., Exh. A pg. 7, line 1). Exhibit A also discloses reference substitution (see, e.g., pg. 19, § 7.5.1 “HTML”) in a web page.

2.4 Our invention disclosure (Exh. A) further discloses that, in response to requests for the web page, generated by the client machines, the web page including the modified embedded object URL is served from the first server (origin) and an embedded object identified by the modified embedded object URL is served from a given one of the repeater servers. See, e.g., Exh. A, pg. 2 “when returning a resource to the Client, replaces references to the Origin Server embedded in the resource by references to the selected Repeater, so that subsequent requests using that reference are implicitly reflected.”

2.5 Our invention disclosure (Exh. A) describes replacing FQDNs (fully qualified domain names) with IP addresses (see, e.g., Exh. A, pg. 7) and that “DNS – Domain Name Service, the system which converts FQDNs into IP addresses.” (Exh. A, pg. 8). In addition, Exhibit A discloses an embodiment “specific to networks using HTTP protocols (and other protocols) communicated over TCP/IP” Exh. A, pg. 10.

2.6 Our invention disclosure (Exh. A) discloses that if a repeater server does not have a requested resource then it tries to get that resource from the origin server (See, e.g., pg. 12, steps 76 and 80-94. “Steps 80-94 specifically describe the processing when the Repeater Service . . . cache does not contain the correct version of the resource.” Pg. 12). Also, our disclosure states that when “a resource is present in the cache and up-to-date, the server containing the resource does not have to request it from the origin server.” Exh. A, pg. 7.

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2.7 Our invention disclosure (Exh. A) further discloses that the “Best repeater server [is] . . . the most appropriate Repeater to service a client request . . . taking into account network distance, network traffic, load, and service provided.” Exh. A, pg. 7, § 5.

2.8 Exhibit B hereto provides a description of an aspect of the invention, described in an electronic mail message sent from David Farber, one of the inventors of the subject invention, to the other inventors. In the e-mail of Exhibit B, Mr. Farber describes a Routing Table Generator used in the best repeater selection algorithm according to the present invention.

2.9 These various features are recited as limitations of claims 41-69 in the subject Appln. No. 09/612,598.

3 Prior to August 1, 1997, we **reduced to practice** in this country the frameworks, methods and systems recited in claims 41- 69 of the subject Appln. No. 09/612,598 as shown by the following:

3.1 Prior to August 1, 1997 we developed a software computer program (“the Program”), the source code of a version of this program is provided herewith in machine readable form on a compact disk (CD) as **Exhibit C**. A directory listing of the files on the CD is attached hereto as **Exhibit D**.

3.2 Prior to August 1, 1997 we configured a content delivery framework (“the *Framework*”) made up of a network of repeater servers and an origin server, similar to the configuration depicted in Figure 2 of Exh. A. The repeater servers were distinct from the origin server.

3.3 Prior to August 1, 1997 the Program was capable of:

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- 3.3.1 Upon request from a client, serving a page from the origin server (See, e.g., Exh. C, file *“wr/agents/Reflector.java::processRequest()”*);
- 3.3.2 Tagging an embedded object in a page served from the origin server so that the object would resolve to a repeater server (i.e., to a server other than the origin server). The tagging was performed on URLs of embedded objects in HTML pages. The tagging was performed by the Program by prepending a repeater name into the URL. (See, e.g., Exh. C, *wr/agents/Reflector.java::processRequest()*, *wr/services/Jigsaw.java::convert()*, *wr/services/RewriteStream.java*, *wr/table/RuleBase.java*)
- 3.3.3 Resolving the URL for the embedded object to one of the repeater servers. In some cases, the repeater’s name was inserted into the modified URLs and the name was subsequently resolved to the IP address of the repeater by the browser’s DNS server. That is, the Framework used a DNS in order to provide a system wherein, in response to requests for a web page, generated by a client, the web page including modified embedded object URLs was served from the origin server and the embedded object identified by the modified embedded object URL was served from a given one of the repeater servers as identified by name servers. (See, e.g., Exh. C, *wr/agents/Reflector.java::processRequest()*, *wr/services/Jigsaw.java::convert()*, *wr/services/RewriteStream.java*, *wr/services/BestRepeater.java*)

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3.3.4 Serving the embedded object from the selected repeater server (See, e.g., Exh. C, *wr/agents/Repeater.java::processRequest(); squid/*).

3.3.5 Selecting a best repeater server based on network distance (including requesting user's location), network traffic, load, and service provided (See, e.g., Exh. C, *wr/services/BestRepeater.java; wr/tools/netmap/*).

3.3.6 Replicating a set of page objects across the network of repeater servers (See, e.g., Exh. C, *squid/; wr/agents/Repeater.java::processRequest(); wr/services/Cache.java*).

3.4 Prior to August 1, 1997 we ran operational tests on the Program using the configuration of the repeater servers and origin server described in Section 3.2 above.

4 I hereby declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application and any patent issued thereon.

Date: \_\_\_\_\_

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Andrew D. Swart